**TECHNICAL REVIEW AND EVALUATION**
**OF APPLICATION FOR**
**AIR QUALITY PERMIT NO. 67347**

**American Woodmark Corp. – Kingman Facility**

## I. INTRODUCTION

This Class I permit is issued to American Woodmark Corporation, the Permittee, for the continued operation of a wood cabinet finishing and assembly facility located in Kingman, Mohave County, Arizona. This is a renewal permit to supersede Air Quality Control Permit No. 57595.

**A.** Company Information

1. Facility Name: American Woodmark Corp. - Kingman Facility
2. Facility Location: 4475 E. Mohave Airport Road
   Kingman, AZ 86401
3. Mailing Address: same as above

**B.** Attainment Classification

The Kingman facility is located in an area which is designated as attainment/unclassified for all criteria pollutants.

## II. PROCESS DESCRIPTION

**A.** Manufacturing

AWC manufactures wood kitchen and bath cabinets at this facility. Pre-fabricated unfinished parts are received at the facility where they are processed through a series of finishing steps, are assembled, and shipped to customers.

In finishing operations, various finishing materials are applied to unfinished wooden pieces to provide protective coating and to impart desired appearance. The finishing materials primarily consist of volatile organic compounds (VOCs) and volatile hazardous air pollutants (VHAPs), carrying either a pigment, which provides color, or a polymer, which provides a protective coating to the unfinished wooden pieces.

The finishing operations are comprised of three processing lines:
Finishing Line 1 - Main Line
Finishing Line 3 - Expedite Line – for low volume manual spray operations
Finishing Line 4 - Hybrid Line – for application of specialty finishes

In general, each finishing line involves a series of process steps including some or all of the following:
Sanding and cleaning,
Coating application (application of stain, toner, sealer, and topcoat in automatic and manual spray booths)
Drying (curing ovens)

Following coating operations, finished parts are assembled into complete cabinets and shipped to customers.

**B.** Control Devices

The VOC and HAP emissions from finishing lines are controlled by:

1. Use of high transfer efficiency coating application equipment (e.g., High Volume-Low Pressure (HVLP) spray guns).
2. Use of low-Hazardous Air Pollutant (HAP) coatings.
3. Dry filters or water wash systems to control overspray from the spray booths.
4. Use of capture system and regenerative thermal oxidizer (RTO) to control VOC emissions from Finishing Lines 1 and 4.

Particulate matter generated by woodworking and sanding/cleaning is captured and controlled through the use of three baghouse dust collection systems.

## III. EMISSIONS

**Table 1: Potential to Emit (PTE)**

| Pollutant | PTE (tons per year) | Minor NSR | | |
|---|---|---|---|---|
| | | PTE Increase | Minor NSR Thresholds | Minor NSR Triggered? |
| $PM_{10}$ | 48.04 | 7.00 | 7.5 | No |
| $PM_{2.5}$ | 42.41 | 3.12 | 5 | No |
| $NO_x$ | 15.53 | - - | - - | - - |
| CO | 13.05 | - - | - - | - - |
| $SO_2$ | 0.09 | - - | - - | - - |
| VOC | 230.51 | - - | - | - |
| HAPs | 80.73 | - - | - - | - - |

## IV. MINOR NEW SOURCE REVIEW

As required by permit number 57595, Dust Collector 3 (BH-3) which is used to capture and control particulate emissions from the sanding, panel cleaning, and dusting operations associated with Finishing Lines 1 and 4, must exhaust into the finishing building at all times. As a result of discharging within the finishing line building, there was no potential to emit associated with BH-3 under that operating scenario. As an effort to shed building heat and reduce the load on the evaporative coolers during warmer months of the year, the Permittee has proposed in the application for this renewal permit to exhaust BH-3 to the atmosphere during the warmer months of the year. The Permittee has voluntarily accepted a permit condition limiting the hours of operation when BH-3 is allowed to exhaust to the atmosphere to 6,887 hours per year. As shown in Table 1 above, the calculated potential to emit $PM_{10}$ and $PM_{2.5}$ not previously emitted by BH-3

are less than the respective permitting exemption thresholds, therefore per A.A.C. R18-2-334.A.3 Minor New Source Review does not apply. The VOC emissions from BH-3 will remain subject to the existing VOC emission limit of permit Condition II.D.1.a of Attachment "B", and therefore do not present an increase in potential to emit. Because there is no increase in potential to emit VOC, minor new source review is not applicable.

## V. APPLICABLE REGULATIONS

Table 2 displays the applicable requirements for each permitted piece of equipment along with a explanation of why the requirement is applicable.

**Table 2: Verification of Applicable Regulations**

| Unit | Control Method | Rule | Discussion |
|---|---|---|---|
| Finishing Lines (except sanding and dusting operations) | VOC Capture System and Regenerative Thermal Oxidizer (Lines 1 and 4 only)<br><br>and<br><br>Dry Filters or Water Wash Systems on all Spray Booths | A.A.C. R18-2-702.B.3 | This rule is a general provision limiting opacity for all existing, stationary, point sources not subject to other standards of performance under Articles 7, 9 or 11 of A.A.C. Title 18 Chapter 2. |
| | | A.A.C. R18-2-727.A | This rule is applicable to spray painting operations other than architectural and spot painting. |
| | | 40 CFR 63 Subpart JJ – National Emission Standards for Wood Furniture Manufacturing Operations | These standards are applicable because the facility exceeds the exemption limits for usage of finishing materials. |
| | | 40 CFR 64 Compliance Assurance Monitoring | These requirements apply to pollutant specific emission units which have pre-control device potential emissions greater than the threshold to classify the source as a major source. |
| Wood Working Operations | Baghouses | A.A.C. R18-2-702.B.3 | This rule is a general provision limiting opacity for all existing, stationary, point sources not subject to other standards of performance under Articles 7, 9 or 11 of A.A.C. Title 18 Chapter 2. |
| | | A.A.C. R18-2-730 | These standards are applicable to particulate emissions from unclassified sources. |

| Unit | Control Method | Rule | Discussion |
|---|---|---|---|
| | | 40 CFR 64 Compliance Assurance Monitoring | These requirements apply to pollutant specific emission units which have pre-control device potential emissions greater than the threshold to classify the source as a major source. |
| Water Heaters, CoRayVac Heating System and Finishing Heaters | Fuel Restrictions | A.A.C. R18-2-724 | This rule is applicable to fossil-fuel fired industrial equipment, with a facility-wide aggregate capacity greater than 0.5 MMBtu/hr, but individually are less than 250 MMBtu/hr, for the primary purpose of producing steam, hot water or hot air and where the products of combustion do not come into direct contact with process materials. |
| Fugitive dust sources | Wetting, Dust Suppressants, Covers. | A.A.C. R18-2 Article 6 | These standards are applicable to all fugitive dust sources at the facility. |
| Mobile sources | None | A.A.C. R18-2-Article 8 | These standards are applicable to all mobile sources at the facility. |
| Abrasive Blasting | Wet blasting; Dust collecting equipment; Other approved methods | A.A.C. R-18-2-702.B.3<br>A.A.C. R-18-2-726 | These standards are applicable to any abrasive blasting operation. |
| Use of Paints (other than in finishing production operations) | Enclosures, solvent restrictions | A.A.C. R18-2-702.B.3<br>A.A.C. R-18-2-727 | This standard is applicable to any spray painting operation. |
| Demolition/renovation operations | N/A | A.A.C. R18-2-1101.A.12 | This standard is applicable to any asbestos related demolition or renovation operations. |

## VI. PREVIOUS PERMIT CONDITIONS

Permit No. 57595 was issued on December 9, 2013, for the continued operation of this facility. Table 3 below illustrates if a section in Permit No. 57595 was revised or deleted.

**Table 3: Permit No. 67347**

| Section No. | Determination | | Comments |
|---|---|---|---|
| | Revised | Delete | |
| Attachment A | | | |
| All | X | | General Provisions - Revised to represent most recent template language |
| Attachment B | | | |
| I | X | | Added ALT-082 opacity measurement option and consolidated opacity monitoring procedures into a facility-wide condition. Added itemization of Conditions subject to two day permit deviation reporting. |
| II.D. | X | | Removed redundant condition requiring 96% control of overspray. Removed non-applicable requirements for architectural coating. |
| | X | | Added quarterly opacity survey of RTO-1 emissions |
| II.D.4 | X | | Added CAM requirements for differential pressure monitoring of the finishing lines 1 and 4 building enclosure. |
| II.D.5 | X | | Revised the frequency of required performance testing. |
| II.E | X | | Removed requirements related to the use of contact adhesives and removable spray booth coatings. |
| II.E.5 | X | | Replaced detailed requirements for option to use performance testing for VHAP compliance demonstration with a reference to 40 CFR 63 Subpart JJ. |
| III | X | | Added Finishing Heaters as subject to the applicability of this section.<br>Corrected fuel restriction to a material condition.<br>Added quarterly opacity survey for visible emissions. |
| IV | X | | Added Dust Collectors 1 and 2 as applicable to this Section.<br>Added a limit on hours of operation per year that Dust Collector 3 may emit external to the finishing line building enclosure.<br>Added a requirement for VOC emission testing of Dust Collector 3.<br>Added CAM requirements for all three Dust Collectors. |
| V | X | | Revised to represent most recent template language |
| VI | X | | Revised to represent most recent template language |
| VII | X | | Revised to represent most recent template language |
| Attachment C | | | |
| All | X | | Updated/revised to current methodology for calculating emissions |
| Attachment D | | | |
| All | X | | Updated/revised to current equipment configuration of facility |

## VII. MONITORING REQUIREMENTS

**A.** Finishing Operations

1. Volatile Organic Compounds

a. The Permittee is required to perform a daily inspection to verify the integrity and particle loading of the spray booth dry filters, and proper operation of the water wash system. The Permittee is also required perform

a weekly inspection of the spray booths to monitor overspray. If overspray discharge is detected, corrective action must be taken no later than four hours following the discovery.

b. The Permittee is required to maintain monthly accounting of all finishing materials purchased and used in all finishing operations as well as disposal of all VOC containing waste materials, along with a breakdown of VOC and volatile organic hazardous air pollutant (VHAP) content for each finishing material as applied in each finishing line.

c. The Permittee is required to use the monthly usage records, VOC capture efficiency and regenerative thermal oxidizer destruction efficiency for lines 1 and 4 based on the most recent performance test to calculate total monthly VOC emissions for each finishing line.

d. The Permittee is required to record the individual month and twelve-month rolling total VOC emissions from all finishing lines each month.

e. The Permittee must notify the Director in writing if VOC emissions from finishing lines 1, 3 and 4 exceed 18.9 tons in any calendar month, with an explanation of how the Permittee intends to maintain compliance with the combined emission limit of 226.6 tons/year.

2. Bypass Damper Operation

a. The Permittee is required to observe and record the position of the directional indicator of each VOC collection system bypass damper at least once per operating day for Lines 1 and 4 and at the commencement of each VOC module operation. The Permittee is required to take corrective action within four hours of any observation indicating a bypass damper in the "open" position during respective VOC module operation.

b. The Permittee is required to perform an annual functional inspection of each VOC collection system bypass damper for the criteria listed below. The Permittee must maintain a log of all bypass damper functional inspections on site readily available for inspection.

3. Regenerative Thermal Oxidizer Inspection

a. The Permittee is required to perform a functional inspection of the RTO-1, including observation of the combustion chamber temperature monitoring system output and verification of normal operation of the RTO-1 and all blowers and dampers in accordance with the manufacturer's specifications. Each functional inspection must be recorded in a log.

b. The Permittee is required to monitor emissions quarterly from the RTO-1.

c. The Permittee is required to perform an annual inspection and maintenance of the RTO-1 burner. A record of each annual RTO-1 burner inspection and all RTO-1 maintenance must be maintained on site readily available for inspection.

**B.** Fuel Burning Equipment

1. The Permittee is required to keep records of the lower heating value and sulfur content of the natural gas fuel.

2. The Permittee is required to monitor emissions quarterly from the hot water heaters and CoRayVac heating system.

**C.** Woodworking Operations

1. The Permittee is required to keep a record of the hours of operation that Dust Collector 3 (BH-3) exhausts external to the finishing building enclosure, and calculate monthly and rolling 12-month total hours of external exhaust operation.

2. The Permittee is required to perform a quarterly inspection of all bags in Dust Collector 1,2 and 3. (BH-1, -2 and -3).

**D.** Fugitive Dust

1. The Permittee is required to keep record of the dates and types of dust control measures employed.

2. The Permittee is required to monitor emissions of any sources of fugitive dust fugitive monthly.

**E.** Mobile Sources

The Permittee is required to keep records of all emission related maintenance performed on the mobile sources.

**F.** Periodic Activities

1. The Permittee is required to record the date, duration, and pollution control measures of any abrasive blasting project.

2. The Permittee is required to record the date, duration, quantity of paint used, any applicable SDS, and pollution control measures of any spray painting project (other than in finishing production operations).

3. The Permittee is required to maintain records of all asbestos related demolition or renovation projects. The required records include the "NESHAP Notification for Renovation and Demolition Activities" form and all supporting documents.

## VIII. COMPLIANCE ASSURANCE MONITORING (40 CFR 64)

**A.** Finishing Lines 1 and 4

1. The Permittee shall monitor the following indicators:

   a. The static pressure on each VOC capture control module once per day.

   b. The static pressure at the RTO-1 inlet continuously.

   c. The temperature at the outlet of the RTO-1 combustion chamber

continuously.

d. Finishing Line Building Enclosure Differential Pressure

(1) Until an automated data collection system is functional within 180 days of permit issue, the differential pressure of the finishing line building enclosure once per Finishing Line 1 and 4 operating day and once per nightly cleaning operation.

(2) Upon commissioning of the automated data collection system, the average differential pressure across all 4 monitors will be monitored continuously on a rolling 15-minute basis.

2. Excursion Determination

a. The static pressure of each VOC capture module shall be maintained negative at all times of operation and cleaning, any positive reading shall be an excursion.

b. The static pressure at the RTO-1 inlet shall be -3.5 inches of water or lower. Each period longer than 15 consecutive minutes of static pressure greater than -3.5 inches of water (i.e. a negative pressure that is not at least -3.5 inches of water) shall be an excursion.

c. The temperature of the RTO-1 combustion chamber shall be maintained at 1425 degrees Fahrenheit, each period of greater than 15 consecutive minutes of temperature less than 1425 degrees Fahrenheit shall be an excursion.

d. The average differential pressure of the finishing line building enclosure shall be -0.007 inches of water or lower. Any average reading of differential pressure greater than -0.007 inches of water (i.e. a negative pressure that is not at least -0.007 inches of water) shall be an excursion.

**B.** Dust Collectors 1, 2 and 3 (BH-1, 2 and 3)

1. The Permittee shall monitor the BH-1 and BH-2 dust collector stacks for visible emissions once every day of operation. BH-3 shall be monitored once per each day it is exhausting external to the finishing building enclosure.

2. Any observation of visible emissions shall be an excursion.

## IX. TESTING REQUIREMENTS

**A.** The Permittee is required to conduct performance testing to determine the percent destruction efficiency of the VOC control system for Finishing Lines 1 and 4 during the second and fourth years of the permit term.

**B.** The Permittee is required to conduct performance testing to determine the percent capture efficiency of the VOC control system for Finishing Lines 1 and 4 during the fourth year of the permit term.

**C.** The Permittee is required to conduct performance testing to determine VOC emissions

from Dust Collector 3 (BH-3) when exhausting external to the finishing line building enclosure no later than 180 days after start-up of that operating scenario and again 24 to 36 months after the initial test.

## X. COMPLIANCE HISTORY

There have been four facility inspections, two performance tests, seven semiannual compliance certification report reviews and three permit deviation reports. None of the permit deviation reports included any occurrence of excess emissions.

Four cases (two Notices of Opportunity to Correct and two Notices of Violation), were opened as a result two of the site inspections, one permit deviation report and the results of one performance test. The Permittee took corrective action to resolve the issues specific to each case, and the cases were closed with no formal enforcement action taken.

No other cases or alleged violations appear to be associated with this facility or place identification number at this time

## XI. LIST OF ABBREVIATIONS

A.A.C. ..... Arizona Administrative Code
ADEQ ..... Arizona Department of Environmental Quality
AQD ..... Air Quality Division
ARS ..... Arizona Revised Statutes
Btu ..... British thermal units
CFR ..... Code of Federal Regulations
CO ..... carbon monoxide
EPA ..... Environmental Protection Agency
g ..... gram
HAP ..... hazardous air pollutant
hr ..... hour
HVLP ..... high volume low pressure
lb ..... pound
MMBtu/hr ..... million British thermal units per hour
NESHAP ..... National Emission Standard for Hazardous Air Pollutants
$NO_x$ ..... nitrogen oxide
OSHA ..... Occupational Safety and Health Administration
PM ..... particulate matter
$PM_{10}$ ..... particulate matter nominally less than 10 micrometers
PM2.5 ..... particulate matter nominally less than 2.5 micrometers
PTE ..... potential-to-emit
RTO ..... regenerative thermal oxidizer
SDS ..... safety data sheet
$SO_2$ ..... sulfur dioxide
tpy ..... tons per year
VHAP ..... volatile hazardous air pollutant
VOC ..... volatile organic compound
yr ..... year